*UNIVERSITY OF RHODE ISLAND*
*Department of Chemistry*
*VIRTUAL SEMINAR*

*3:00 PM, Monday, April 19, 2021*
*Please email blucht@uri.edu for link*

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# *"Harnessing the power of weak interactions: fluorescent sensors and molecular machines"*

***HOST***
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***Harnessing the power of weak interactions: fluorescent sensors and molecular machines.***

Nature routinely uses weak interactions in performing the most disparate functions, such as recognition, signaling, catalysis, replication and translocation. Recognition and signaling are examples of simple information processing functions. Artificial receptors based on small molecules cannot outcompete the efficient biomacromolecules obtained during billion years-long evolutionary pressure, but are simpler to design, prepare and study. In the first part of the seminar, we will see how small-molecule fluorescent sensors can make the sensing of explosives, such as TNT, RDX, and ANFO/ANNM fast, inexpensive and portable. Life can exist only if it can support a condition of homeostasis. Doing so requires a constant input of energy and a constant flow of matter. Transport of matter against a gradient is one of the most basic functions of all living things. In the second part of the talk, we will talk more in detail about artificial molecular machines and how we can operate a molecular pump—a molecule that can pump rings uphill to a higher potential energy—using an electrochemical cycle.